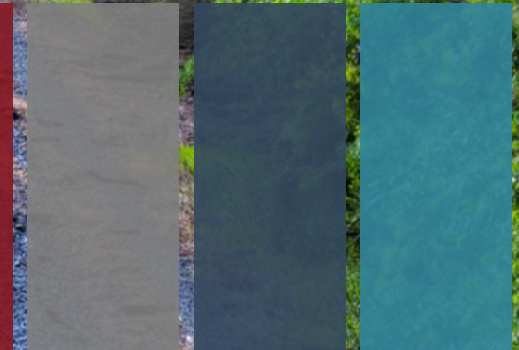




Freight Advisory Council
March 27, 2015
Crude by Rail



02

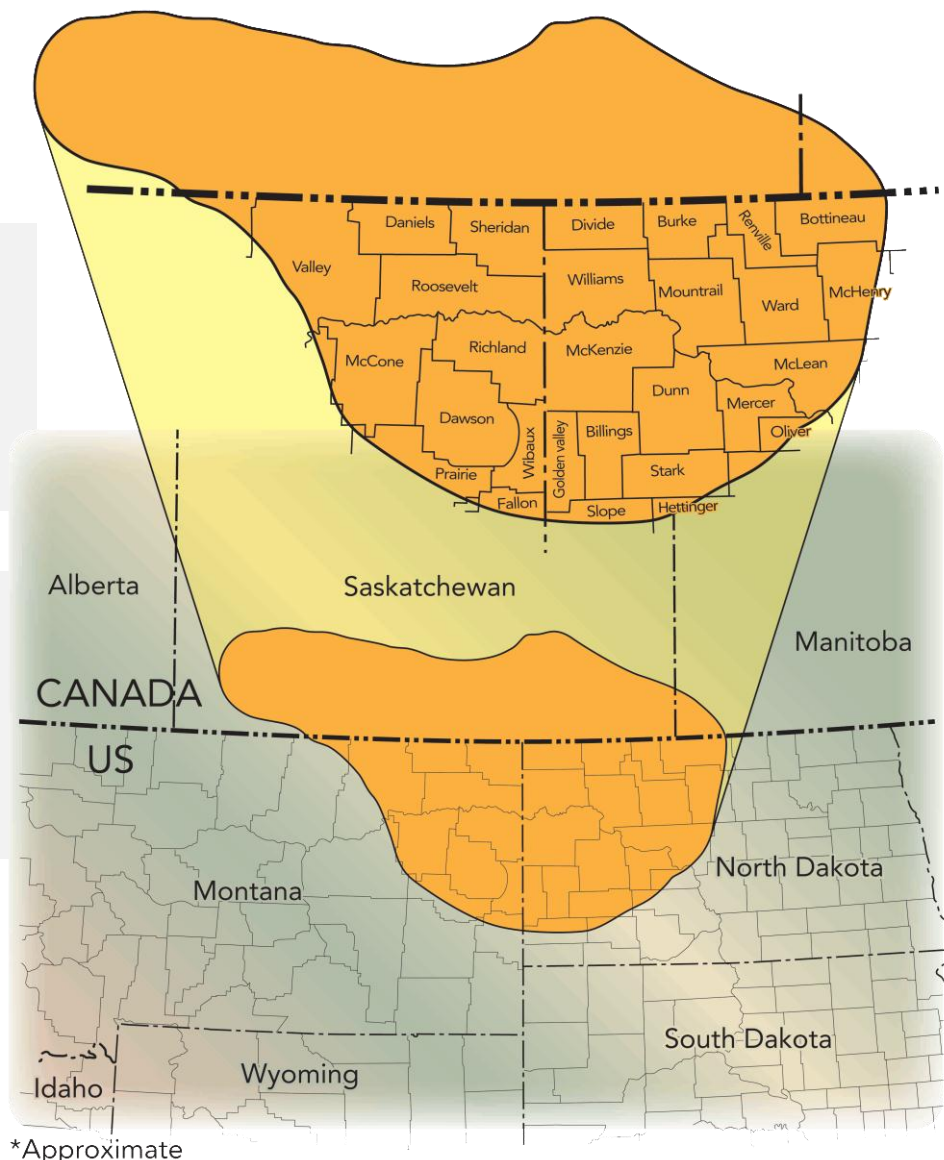
“Domestic Energy Growth –truly a gift to the US. This is the greatest business development of our time.” by Matt Rose, Chief Executive, BNSF at Transportation Research Board January 2015

Why Rail?

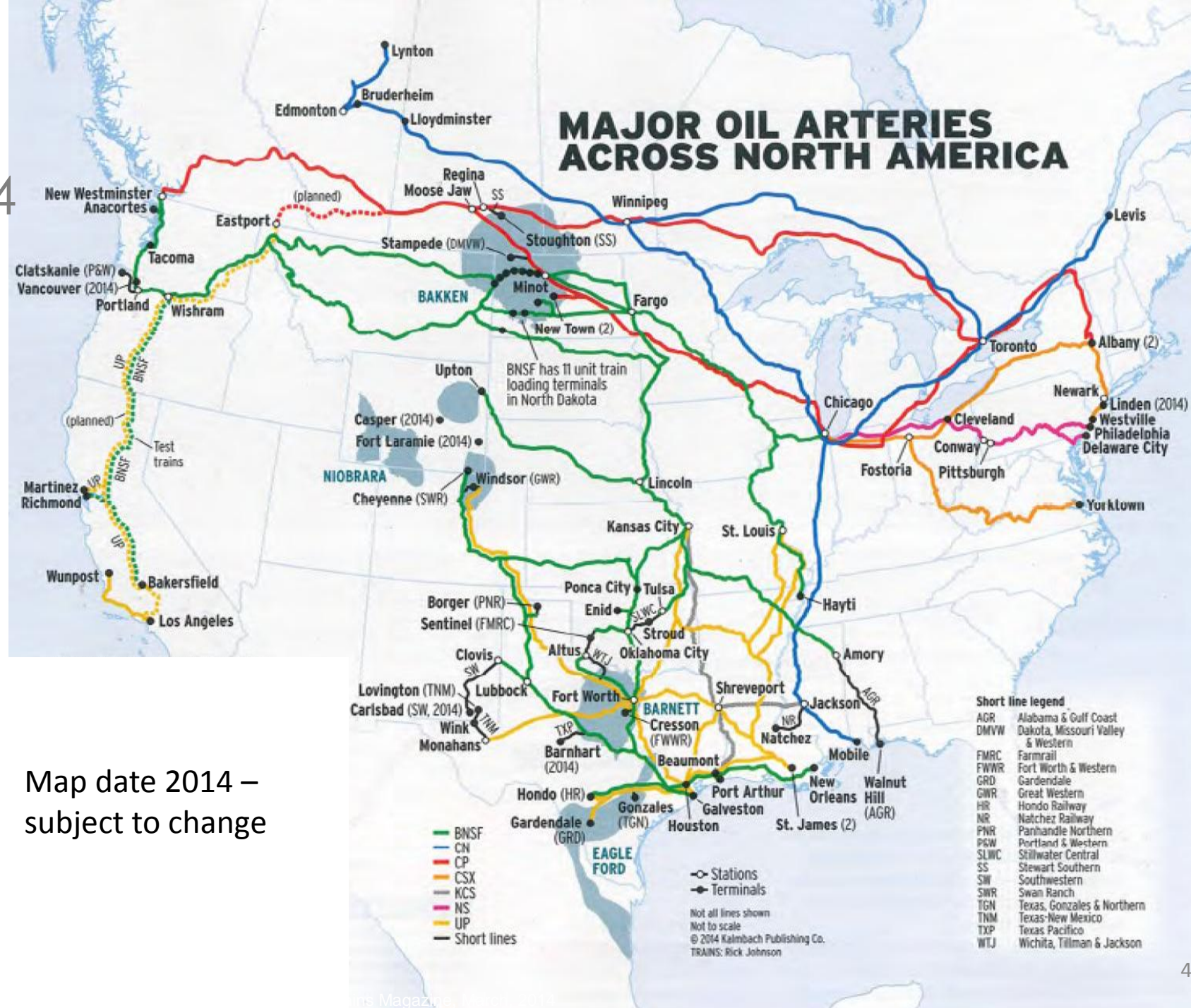
- Current Bakken crude pipelines don't have sufficient capacity to meet market demand.
- Rail provides a *rolling pipeline* for crude.
- Rail is flexible and can change destination en route.
- Long term opportunity for crude by rail to ship to east and west coasts, where rail facilities exist.

Bakken Shale Formation

- Light sweet crude oil
- Contains more volatile components than heavier oils from the tar sands of Canada
 - Explosive
 - Flammable



04



Common Carrier Obligation

“A common carrier is legally bound to carry all passengers or freight as long as there is enough space, the fee is paid, and no reasonable grounds to refuse to do so exist. A common carrier that unjustifiably refuses to carry a particular person or cargo may be sued for damages.”

- Railroads are common carriers
- Cannot discriminate → cannot refuse service without a compelling reason
- Cannot refuse to take cars that are functional and meet federal safety requirements

Recent Incidents

- Jul 6, 2013, Lac-Megantic, Quebec
- Nov 8, 2013, Pickens County, Alabama
- Dec 30, 2013, Casselton, ND
- Apr 30, 2014
Lynchburg, VA
- Feb 16, 2015
West Virginia
- March 5, 2015
Galena, IL



June 7, 2014 Executive Order

07

- US DOT requires railroads to notify State Emergency Response Commissions (SERC) of the operation of trains carrying more than 1,000,000 gallons of Bakken crude oil per week through their state
- In Iowa, BNSF and CP reported trains meeting the threshold
- Does not apply to all crude oil, only Bakken crude oil

 Crude by Rail

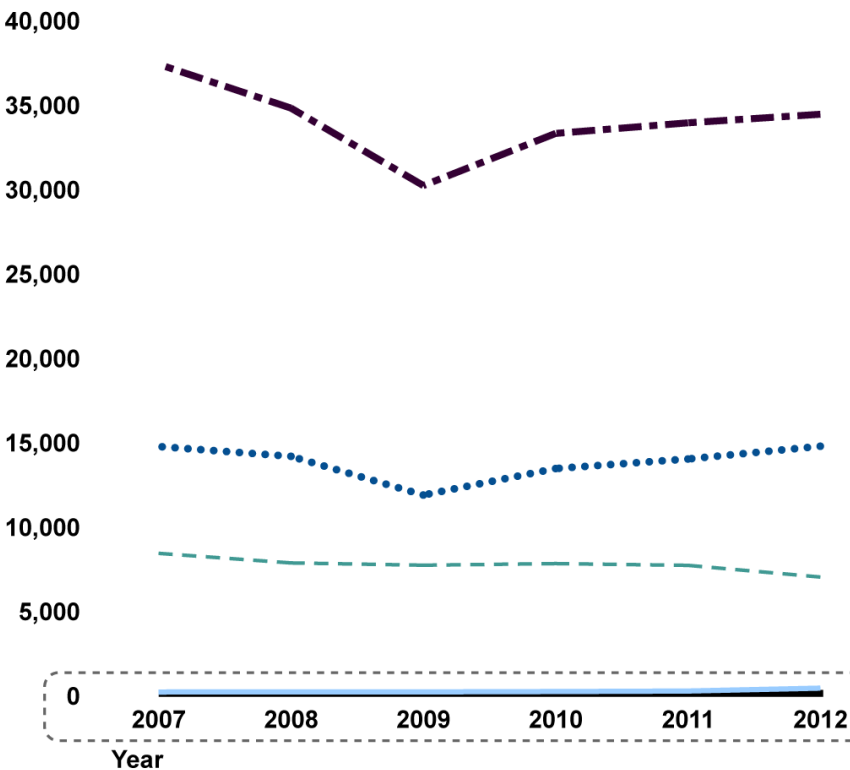
Bakken Crude Oil Routes



National Freight Comparison

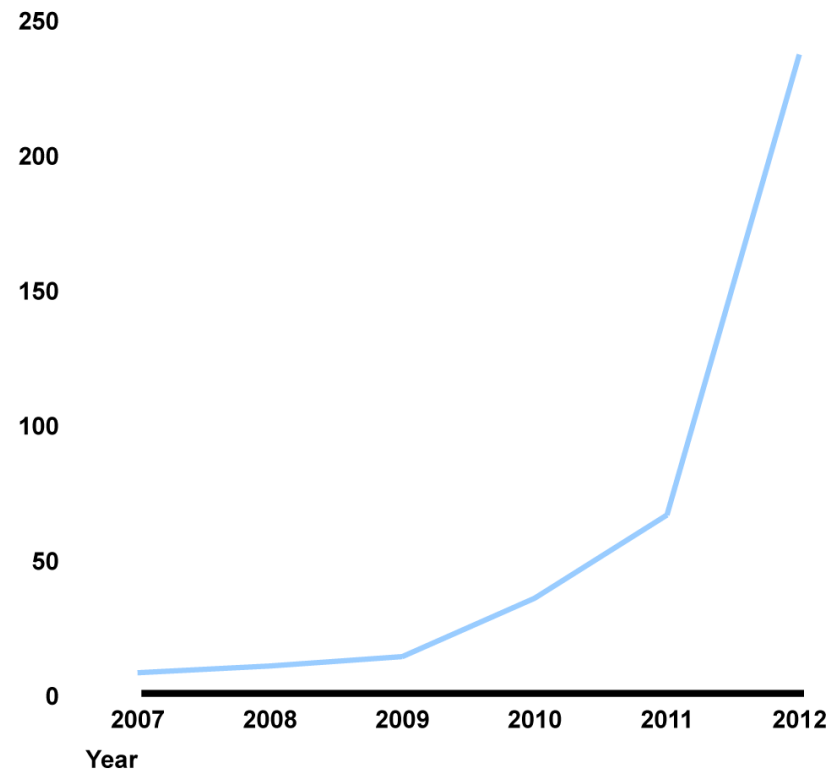
All, intermodal, coal, and crude oil carloads^a

Estimated carloads per year (in thousands)



Crude oil carloads

Estimated carloads per year (in thousands)

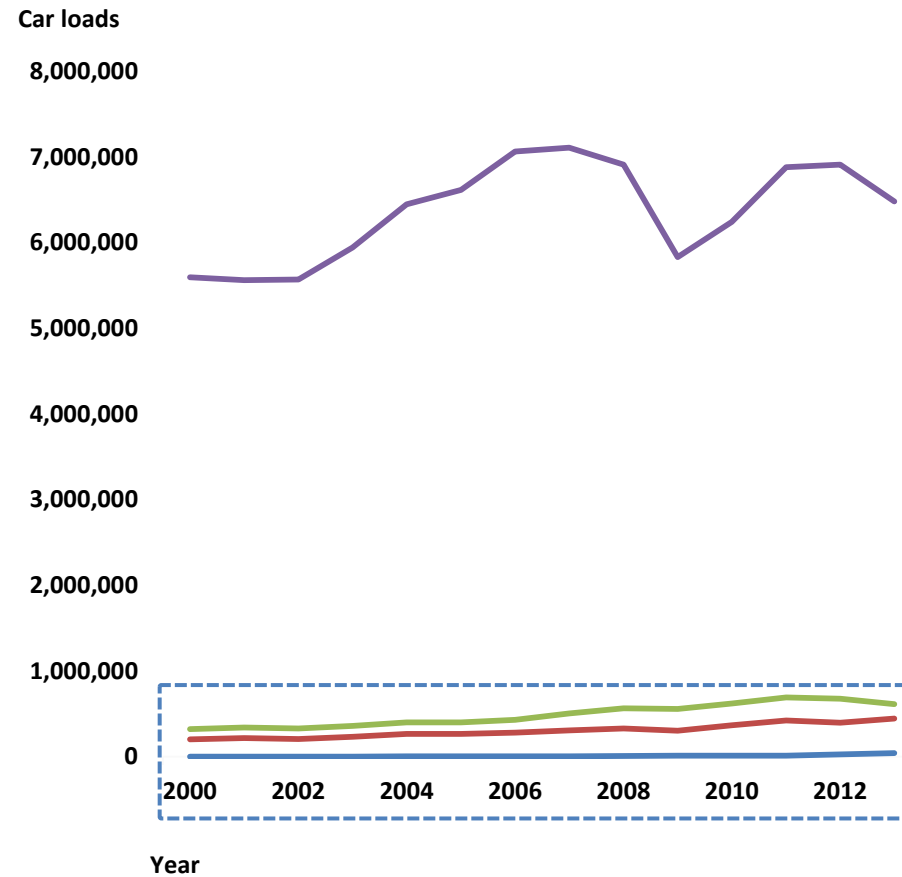


- All
- Intermodal
- Coal
- Crude Oil

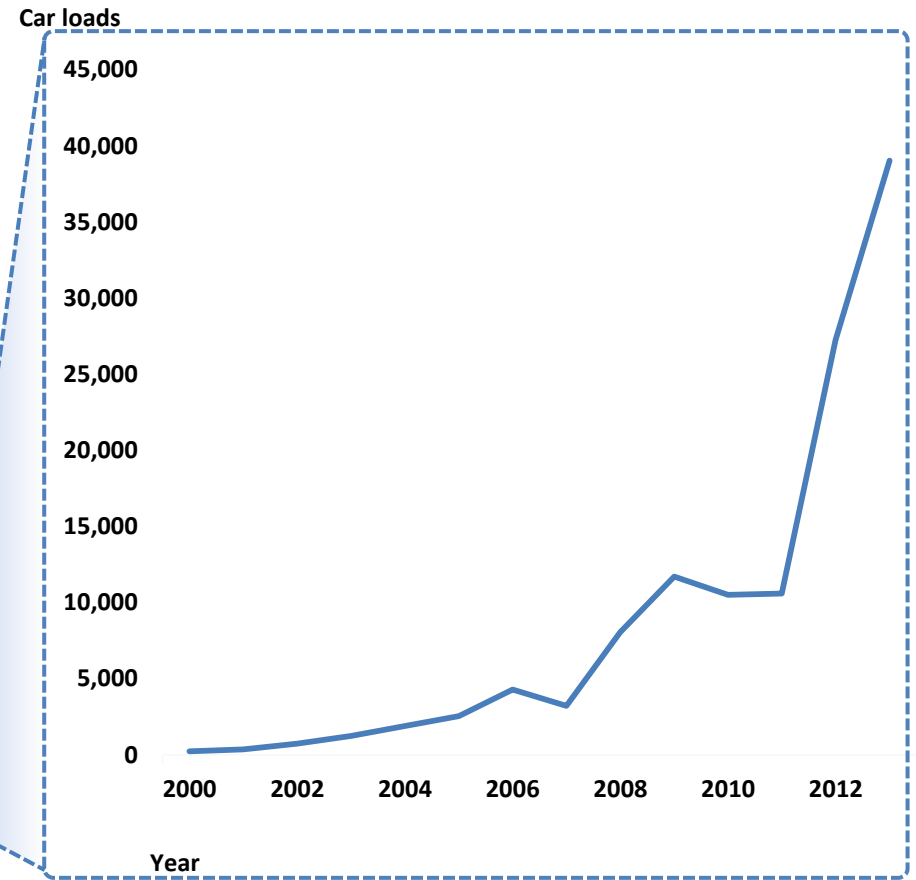
Iowa Freight Comparison

10

Car Loads in Iowa 2000-2013

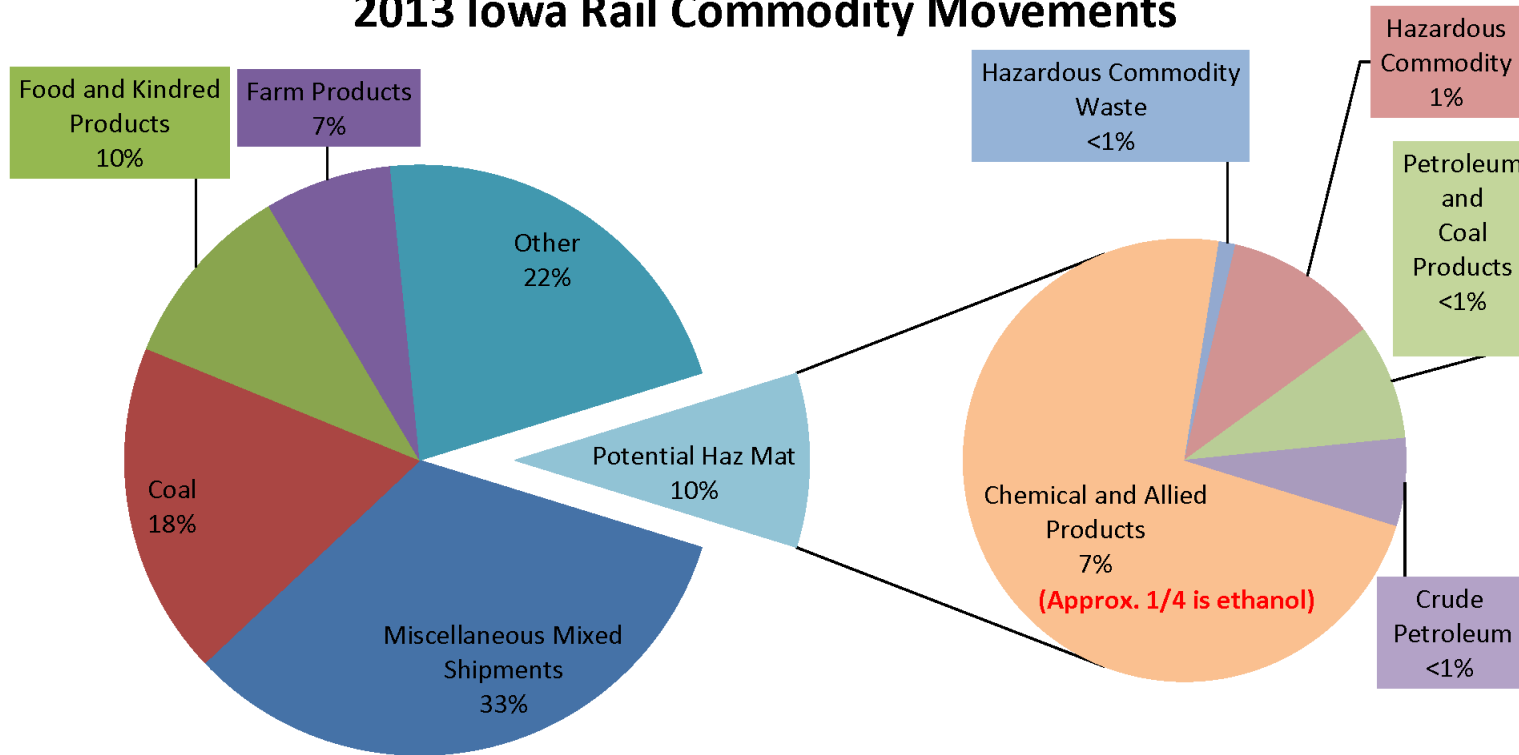


Car Loads in Iowa 2000-2013



- Crude
- Chemicals (includes Ethanol)
- Total HazMat
- All Car Loads

2013 Iowa Rail Commodity Movements



2013 data, Railroad Annual Reports

Some Statistics (for Hazardous Materials Shipments)

12

- 99.997% of rail hazmat shipments reached their destination without a release caused by a train accident (through 2010).
- Hazmat shipments equaled roughly 6% of all U.S. rail traffic (2010).
- Train accidents with a hazmat release declined by 91% from 1980 to 2010.

Source: AAR

13

AVOID

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Infrastructure

- Railroads invest heavily in infrastructure improvements
- Railroads self-inspect (the entire system)
- Iowa DOT track inspection (monitor RR)
- FRA inspection (spot check)
- FRA regulates jointly with PHMSA for hazardous cargo

AVOID

Car Safety

- Recommended modifications to cars include protection from
 - Puncture
 - Leakage
 - Bursting
- Recommended modifying or phasing out older designs
- Proposed modifications to rules and comments were submitted in late 2013

EVOLUTION OF RAIL INDUSTRY TANK CAR STANDARDS FOR CRUDE OIL

The railroad industry is proposing to increase the federal tank car design and construction standards for new tank cars used to transport crude oil. This proposal comes after a previous upgrade proposal which the industry voluntarily adopted and has been observing since October 2011. This graphic shows the additional tank car components included in the latest rail industry proposal.

HIGH CAPACITY PRESSURE RELIEF VALVE

Current Standard:
No requirement

Latest Rail Industry Proposal:
Requires a high capacity pressure relief device to protect against a rise in internal pressure resulting from fire. Provides for faster release of product.

TOP FITTINGS PROTECTION

Current Standard:
Requires top fittings protection to protect the integrity of valves and fittings used to load product in the event of an accident.

Latest Rail Industry Proposal:
Contains the same requirement.

STEEL TANK

Current Standard:
Requires a minimum ½ inch thick steel tank for unjacketed cars and a minimum ⅝ inch thick steel tank for jacketed cars.

Latest Rail Industry Proposal:
Requires a minimum ⅝ inch thick steel tank.

HEAD SHIELDS

Current Standard:
Requires minimum ½ inch thick half height head shields at both ends of the tank car to improve puncture resistance.

Latest Rail Industry Proposal:
Requires ½ inch thick full-height head shields at both ends of the tank car.

BOTTOM OUTLET HANDLES

Current Standard:
No requirement

Latest Rail Industry Proposal:
Requires bottom outlet handle reconfiguration to prevent the handle from inadvertently opening the bottom outlets in the event of an accident.

JACKET AND THERMAL PROTECTION

Current Standard:
Requires a minimum ½ inch thick steel tank OR a ⅝ inch thick steel jacket.

Latest Rail Industry Proposal:
Requires the addition of both a ⅝ inch thick steel jacket around the tank car and thermal protection.

AVOID

17 U.S. DOT agreement with rail industry provides additional operating practice risk reductions

- **Speed Restrictions:**
 - Speed restrictions of 40 mph for Key Trains carrying crude in DOT-111 tank cars through High Threat Urban Areas (HTUAs)
- **Risk-based Routing**
 - Apply PHMSA's *Rail Corridor Risk Management System (RCRMS)* and its 27 Risk Factors that define the 'most safe and secure' route for trains carrying TIH/PIH, to the routing of unit crude trains
- **Derailment Prevention**
 - Wayside Detector Network –detects flaws with equipment wheels as they pass detector device
 - Increased Rail Inspection- beyond FRA regulations
 - All Key Crude Trains operated with Distributed Power (DP) or an operative two-way End of Train Device.

 Crude by Rail

18

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19

- First Responder Coordination
- Training for local first responders
 - TRANSCAER (Transportation Community Awareness and Emergency Response)
 - TRANSCAER's Iowa crude training planned for 2015 (6 locations in Iowa)
 - Pueblo, Colorado training at TTCI national RR research and training facility
 - \$5 M commitment by rail industry to train first responders
- Railroad actions
 - Response plans
 - Coordination
 - Specialized Railroad employee training for hazardous materials

PLAN

20

Iowa DOT

- Multi-modal table top exercises for emergency response, Summer 2015
- Focus inspectors on crude oil routes
- Review crossing safety on crude oil routes
- Coordination with HSEMD, DNR, local emergency responders, railroads
- Participate in TRANSCAER's planning committee
- Multi-agency study on Crude Oil and Biofuel Rail Shipments in Iowa

21

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22

Railroads

- Report to applicable agencies and law enforcement
- Provide manifest information
- Support responders at the scene
 - Local fire departments and police have jurisdiction at incidents
- Provide track protection
- Provide staff in incidents
 - Railroad law enforcement
 - Railroad emergency responders
 - Environmental mitigation

RESPOND

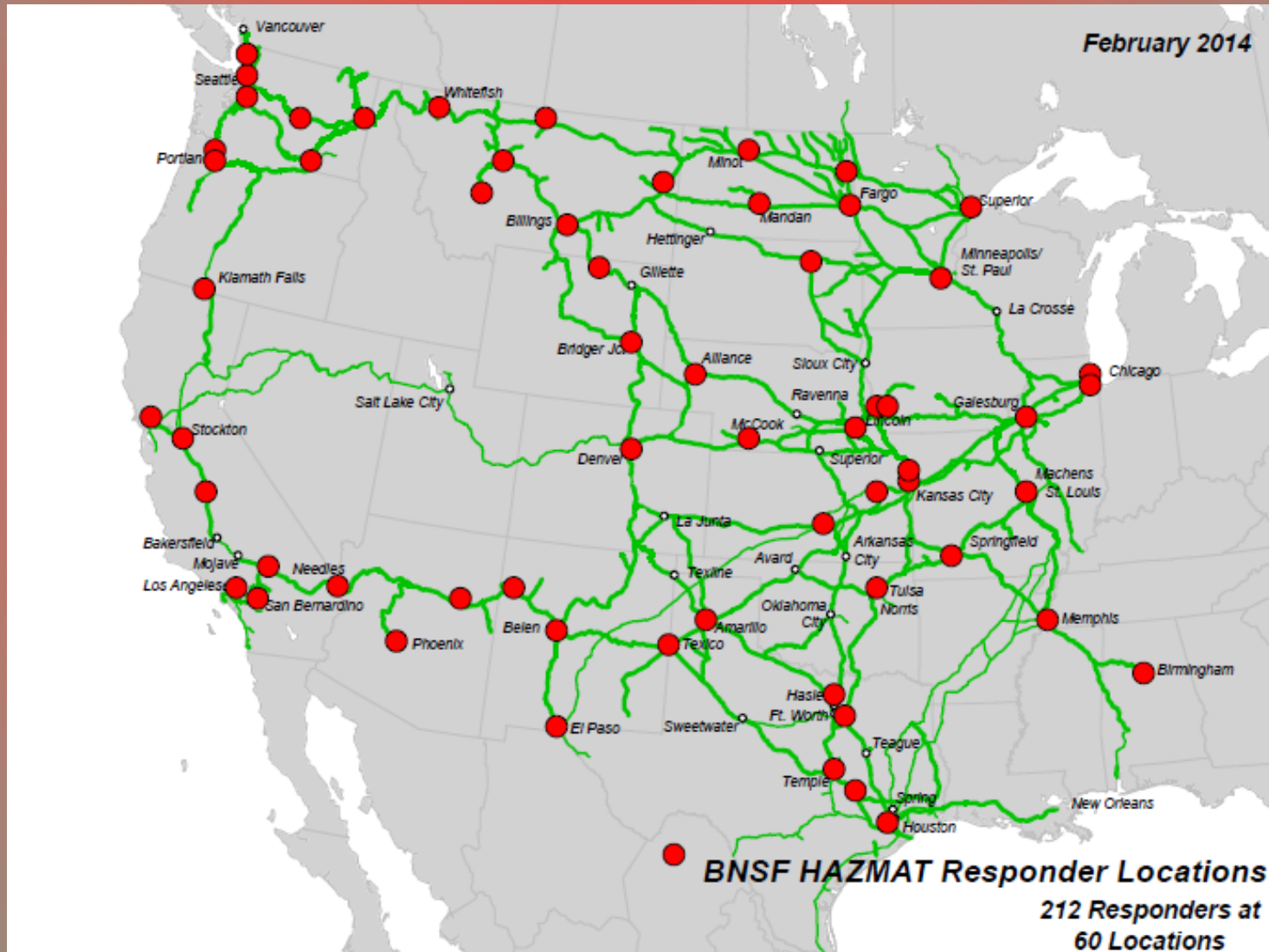
23

- Railroads pre-position assets
- For example, BNSF pre-positions 212 first responders and equipment at 60 locations across the network.
 - Industrial fire-fighting foam trailers
 - Emergency breathing air trailers
 - Chlorine kits
 - Air monitoring assets



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24



Trends and Issues

25

- Continued investment in rail capacity and expansion
- Local opposition to capital investments
- Increased public scrutiny
- Local community emergency preparedness
- Frac sand shipments – truck and rail impacts
- Propane impacts – Cochin pipeline reversal impacting propane supply in Iowa
- Pipelines

Trends and Issues

26

- Increased pressure for regulatory involvement
- Pending DOT rulemakings
 - Tank car standards
 - Operating practices
- Crude by Rail Safety Act – proposed March 25, 2015
 - Tank Car standards
 - Limit volatile component of crude shipped by rail
- North Dakota – 2014 limit on tank pressures inside cars carrying Bakken crude
- Energy prices – what does that mean for the future of Crude by Rail?

Discussion and Questions

